

The National Academies of
SCIENCES • ENGINEERING • MEDICINE

FORUM ON MICROBIAL THREATS

One Health Work Group Concept Note

January 2017

The Forum on Microbial Threats provides a structured opportunity for discussion and scrutiny of critical—and possibly contentious—scientific and policy issues related to research on and the prevention, detection, surveillance, and responses to emerging and reemerging infectious diseases in humans, plants and animals as well as the microbiome in health and disease. The forum strives to facilitate cross-sector dialogue and collaboration through public debate and private consultation to stimulate original thinking about the most pressing issues across the spectrum of microbial threats. The forum mechanism of the National Academies Sciences, Engineering, and Medicine (the National Academies) allows for a variety of activities through which the forum members can explore areas of mutual interest. One such activity is work groups.

This document proposes a work group focused on One Health. To explore this concept, the document begins with a background on the importance of the One Health approach; a project summary outlining the proposed One Health work group objectives and outcomes, activities, project management, and budget; and recommendations for next steps.

I. BACKGROUND

While the world has made significant strides to mitigate the threat of infectious diseases over the past century, we have recently experienced major outbreaks of infectious diseases, such as SARS, H5N1 and H1N1 influenza, MERS, and Ebola virus disease. Infectious disease events appear to be increasing considerably over time. With an ever-growing population, and consequently, greater food production and animal–human interaction, the probability of zoonotic transmission has increased. Moreover, globalization and urbanization have facilitated the risks of contagion. Such drivers allow microbial pathogens to become a rising threat, especially as these pathogens have the capacity to evolve rapidly and adapt to new ecological niches. Though we know that the majority of known human infections have originated from animals, the human health, veterinary, environment, agriculture, and wildlife health sectors tend to work separately. This lack of coordination and information sharing restricts our opportunities to adequately prevent the transmission of pathogens between humans and animals.

To attain optimal health among humans, animals, plants, and the environment, a transdisciplinary collaborative effort called One Health has been founded. One Health approaches have guided recent initiatives. For example, the USAID Emerging Pandemic Threats

The National Academies of SCIENCES • ENGINEERING • MEDICINE

(EPT) program uses a One Health approach to strengthen capacities in developing countries to prevent, detect, and control infectious diseases in animals and people with an emphasis on early identification of, and response to, dangerous pathogens from animals before they can become significant threats to human health.

While efforts like the EPT program have helped bring One Health to the forefront, understanding of the underlying causes for emergence and spread of zoonotic pathogens in humans needs to be further deepened, and the integration of One Health in the field needs to be expanded. To ensure that a One Health approach is operationalized on the ground and best practices are applied, a structured entity such as a work group that can bring together, on a periodic basis, experts from multiple disciplines—such as public health, anthropology, animal/veterinary, plant pathology, agriculture, botany, environment, economics, engineering, national security, and others—and from various sectors, including the government, academia, private sector, and civil society organizations, is critical.

II. PROJECT SUMMARY

2.1 Overall objective and expected outcomes

The work group will comprise of both forum members and stakeholders external to the forum. Through a detailed ongoing exploration and dialogue and information sharing, the One Health work group's objectives are to:

- Discuss the current understanding of high risk interfaces for pathogen spillover from animals into people;
- Review best practices and valuable lessons in integrating the One Health approach in outbreak preparedness and response;
- Develop ideas for expanding and linking One Health efforts to plant and environmental health;
- Identify priorities, effective strategies, and creative solutions for preventing and controlling emerging disease threats; and
- Inspire policy decisions and encourage global and local health capacity investments that would advance One Health efforts.

In all, the expected outcome is to help facilitate and refine the implementation of the One Health approach needed to leverage existing programs and to better target effective detection, diagnosis, intervention, and prevention of major infectious disease outbreaks.

The National Academies of SCIENCES • ENGINEERING • MEDICINE

2.2 Main Activities

A. Conference calls and side meetings

The work group will be convened through conference calls and/or side meetings when the forum meets twice a year.

B. *Perspectives*

In addition to teleconferences and meetings, the work group may produce *Perspectives*—written works authored by named individuals and distributed by the National Academy of Medicine (NAM) that offer observations and opinions of leading experts on a variety of innovations and challenges in health and health care.

Perspectives comprise two forms: 1) Discussion papers—have no predetermined maximum length, have the flavor of traditional journal articles in both length and approach; and 2) Commentaries—shorter, op-ed style pieces focused on a singular subject, and generally, will have a maximum length of 500 words.

When work group members come together to write *Perspectives*, they are authoring them as collection of individuals, and not in the name of the forum, the NAM, or the National Academies.¹ Judgment must be used so as not to create the impression that the forum is issuing a substantive product.

Since the views expressed in discussion papers and commentaries are those of the individual authors and not necessarily of the authors' organizations or of the NAM, the papers may present suggestions and recommendations of the authors—except commenting on pending or existing legislative bills or regulatory proposals. The papers are not subjected to the review procedures of, nor are they reports of, the NAM or the National Academies.²

Potential topics for *Perspectives* by One Health work group:

- One Health approach to antimicrobial resistance
- Best practices in integrating One Health into existing curricula to develop and build skills, expertise, and competencies

¹ Standard disclaimer will be placed on cover page: "The views expressed in this Perspective are those of the authors and not necessarily of the authors' organizations, the NAM, or the National Academies. The Perspective is intended to help inform and stimulate discussion. It has not been subjected to the review procedures of, nor is it a report of, the NAM or National Academies. Copyright by the National Academy of Sciences. All rights reserved." Additionally, the following footnote may be added after the author listing: "The authors are participants in the activities of the Forum on Microbial Threats [insert work group name] of the National Academies."

² Authors will be asked to sign a copyright assignment letter to indicate that the National Academy of Sciences—which is the legal governing body of the National Academies and the NAM—owns the paper, all intellectual property rights included, and that publication or dissemination of the discussion paper or commentary by the author must be approved in writing by the National Academy of Sciences.

The National Academies of

SCIENCES • ENGINEERING • MEDICINE

- Value proposition and business case for investing in the One Health approach
- Infectious diseases of plants, especially as they affect major food crops (e.g., rice, wheat, potatoes, other) and food security
- Other topics related to the role of the private sector; interdisciplinary surveillance; drivers of pathogen spillover and amplification; coordinated sharing and interpretation of data and protocols, etc.

C. Other

If an upcoming workshop is relevant to the topic of One Health, the work group may advise the workshop's planning committee on potential speakers, content of sessions, etc.

If the work group interest grows, then there are other opportunities to develop products besides publishing articles. For example, the National Academies' Forum on Public-Private Partnerships' medical device donations work group is exploring the idea of commissioning primary data collection and eventually developing a toolkit.

2.3 Project management

Forum member, Jonna Mazet, will take the lead in guiding the overall process. The work group will regularly report back to the forum membership to provide updates and solicit input from the larger membership.

Forum staff will support the coordination and functioning of work groups, and will work with authors on editorial and content issues for the *Perspectives* before submitting drafts for internal National Academies review and subsequent publication on the NAM website and any other planned distribution.

2.4 Budget

The work group does not have a separate budget from the forum's core activities. Depending on the scale of proposed workgroup activities, additional fundraising may be needed.

III. Next Steps

For next steps, forum members interested in joining the work group should notify Jonna and/or staff. If at least a small core set of members are interested in participating from the beginning, the work group will be launched.

After, staff will schedule a work group call to begin specifically defining the parameters of the group in terms of focus, structure, expectations, operations, and outputs.